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Hopper Burn on Papaya Caused by the Stevens Leafhopper

Richard H. Ebesu, Department of Plant and Environmental Protection Sciences

Stevens leafhopper, *Empoasca stevensi*, can be a serious pest of papaya. The leafhoppers are found mostly on the underside of the leaves. They feed on the plant sap, causing a drying of the leaf tissue called "hopper burn." The leafhopper releases saliva into the plant tissue as it inserts its needle-like stylet mouthparts. The saliva is toxic to the plant; the leaves turn yellow, their edges dry and their tissue dies, and the plant becomes stunted (Figure 1). Young plants are more susceptible, yet plants of all ages are attacked. The red-fleshed commercial papaya cultivars like 'Sunrise' are more susceptible to hopper burn than the yellow-fleshed cultivars like 'Waimanalo Low-Bearing' and 'Kapoho', although some yellow-fleshed cultivars (notably 'Line 8') may be susceptible. Common symptoms of leafhopper feeding are puncture marks along the leaf veins and petiole and the resulting bleeding of milky white latex from the plant. The plant usually recovers after removal of the leafhoppers, but large populations of leafhoppers can severely damage the plant.

The winged adult leafhopper is about $\frac{1}{8}$ inch long and slender, less than $\frac{1}{32}$ inch wide. It is light yellowish-green with two longitudinal white stripes on top of its thorax, just behind the head (Figure 2). The immature stages (nymphs) are light green and look like the adults only they are smaller and without wings. The leafhoppers normally run quickly or jump when the leaf is turned over to observe the underside.

The female lays her eggs singly, mostly in the veins on the underside of the leaf. Usually, only the puncture wound where the female laid the egg can be seen. On average, the eggs take 10 days to hatch and the immature leafhoppers take 12–15 days to complete five growth stages before turning into adults. On becoming an adult, the female lays her first egg after 7 days. Females live for an average of 6 weeks, producing an average of seven



Figure 1. Severe damage to a papaya plant caused by Stevens leafhopper feeding.



Figure 2. Stevens leafhopper adult, about $\frac{1}{8}$ inch long.

eggs per week. The complete life cycle of a female will take about 26 days.

The Stevens leafhopper is very similar to the southern garden leafhopper (*Empoasca solana*), which is also light green but is slightly longer than the Stevens leafhopper. The southern garden leafhopper is found on many plants including green beans, spiny amaranth, and

the weed black nightshade (or popolo, *Solanum nigrum*). It has also been reported on papaya but it does not seem to be the major cause of hopper burn on papaya.

Host plants

The Stevens leafhopper may be found on papaya throughout the year but appear to be most damaging in the warm summer months when the populations are at their highest. Besides papaya, it has been reported on cowpea, plumeria, lima bean, and the Mexican fire plant (*Euphorbia heterophylla*). It has been known to rest on the weed *Sigesbeckia orientalis*.

Control

There are no known biological control agents for the Stevens leafhopper. General predators such as spiders and small wasps may eat them, and a fungal disease can infect them if conditions are right. Insecticides registered for papaya may help to reduce leafhopper populations provided that spray coverage is adequate. Papaya

plants are sensitive to many pesticides and the spreader-stickers used with them, and users should test products for potential damage before proceeding with wide-scale applications. Control of leafhoppers when their populations are small is easier than after waiting until they are present in large numbers. Leafhopper populations can be monitored with yellow sticky traps spaced among the plants.

References

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